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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/616,372	07/09/2003	Graham Sparey-Taylor	005092.00040	1222

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EXAMINER

SOOHOO, TONY GLEN

ART UNIT	PAPER NUMBER
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1723

DATE MAILED: 06/07/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/616,372	Applicant(s) SPAREY-TAYLOR ET AL.	
	Examiner Tony G. Soohoo	Art Unit 1723	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 May 2005.
 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-54 is/are pending in the application.
 4a) Of the above claim(s) 44-54 is/are withdrawn from consideration.
 5) ☐ Claim(s) _____ is/are allowed.
 6) ☒ Claim(s) 1-43 is/are rejected.
 7) ☐ Claim(s) _____ is/are objected to.
 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) ☐ All b) ☐ Some * c) ☐ None of:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
 * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>10-03&04/04 2pgs.</u> | 6) <input type="checkbox"/> Other: _____ |

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DETAILED ACTION

Election/Restrictions

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:
 - I. Claims 1-43, drawn to a fluid processing device, classified in class 366, subclass 114.
 - II. Claims 44-454, drawn to a method of mixing fluid, classified in class 366, subclass 349.

The inventions are distinct, each from the other because of the following reasons:

2. Inventions Group II and Group I are related as process and apparatus for its practice. The inventions are distinct if it can be shown that either: (1) the process as claimed can be practiced by another materially different apparatus or by hand, or (2) the apparatus as claimed can be used to practice another and materially different process. (MPEP § 806.05(e)). In this case the apparatus may be used as a fluidic pump or degassing device without a mixing process step.

Claim interpretation

With regards to claims 36-39, the claim points out the junction "is operative at fluid pressure ... of at least [a specific amount of] psi". The claims are directed to the function of the device and thus affords no patentable distinction to the structure of the junction itself.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yasuda et al 6244738 in view of Khuri-Yakub et al (Khuri-Yakub) US 2002/0083711 (both cited on PTO 1449).

With regards to at least claim 1, The Yasuda (et al 6244738) reference discloses a body having a 1st duct 21, 2nd duct 22 and ultrasound transducer 48, 42, 43, 32 which may be operated at any wavelength in correspondence as desired toward the other boundary of the fluidic junction. The Yasuda reference also teaches the use of the manifold in combination with a further fluidic component 52 integral with the manifold body.

The Yasuda reference discloses all of the recited subject matter as defined within the scope of the claims with the exception of the channel width of the junction being not more than 300 microns.

The reference to Khuri-Yakub et al US 2002/0083711, discloses a microchannel in which an acoustic field is provided by transducers 37 in which the channel boundary may be made in the size down the range of 1 micron, page 2, [0023], and see claims 2, 5. Also in the art of fluid handling, the size of the fluid channel is a direct variable in the amount of flow that the device may process.

In view of Khuri-Yakub et al US 2002/0083711, it is deemed that it would have been obvious to one of ordinary skill in the art to change the size of the channel of Yasuda such that the channel is of an appropriate size such as 1 micron so that the produce a

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more precise amount of fluid flow to be processed, since such a modification would have involved a mere change in the size of a component. A change in size is generally recognized as being within the level of ordinary skill in the art. In re Rose, 105 USPQ 237 (CCPA 1955).

With regards to the particular fluid-handling component operative on the manifold body of claims 3-20, and 43 it is noted that micro components of transducers, mixers, condition sensors, temperature sensors, pressure sensors, optical sensors, flow rate sensors, dielectric constant sensors, viscosity sensors, turbidity sensor, micro valves, fluid pumps, heaters components, cooler components, are all old and well known in use in combination with a microchannel in the art of microfluidic processors, absent any unexpected result in the fluid processing produced by such devices, whereas the Yasuda reference teaches that another fluidic component 52 may be used in combination with the manifold, it is deemed that it would have been obvious to one of ordinary skill in the art to substitute for the Yasuda reference with another fluid component in combination with the manifold so that the fluid may be processed in an additional manner by the respective additional fluidic component processor.

With particular regards to claims 21-24, 28, 32-33, 35, 41-42, the claimed production technique (i.e. laminate, monolithic), channel or junction shape, and type of materials of micromixer device as recited in the claims, absent any unexpected result to the type of manufactured material in which the manifold channel is produced, it is deemed that it would have been obvious to one of ordinary skill in the art to substitute the material of the manifold body 1, 16 with any material or change the material channel

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configuration such as plastic, transparent glass, or ceramics, or silica, or shapes of T, circular, square or triangle sections so as to produce a more cost effect manner to provide a channel surface in which the manifold resides. It has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. In re Leshin, 125 USPQ 416, and a mere change in form or shape on the basis of suitability is a matter of obvious mechanical design choice. In re Dailey, 149 USPQ 47 (CCPA 1976).

With particular regards to claims 25-27, and 29-31, with regard to the type of transducer to produce the ultrasound wave, the use of piezoelectric, magento-restrictive, electrostatic, and thermostatic transducers are all commonly known functional equivalents to produce wave energy. Accordingly, it is deemed that it would have been obvious to one of ordinary skill in the art to substitute for the ultrasound vibrator with any functional equivalent transducer device in order to ease and lower construction costs.

With regards to claims 36-39, the claim points out the junction "is operative at fluid pressure ... of at least [a specific amount of] psi". The claims are directed to the function of the device and thus affords no patentable distinction to the structure of the junction itself.

Conclusion

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Cargill et al Re.26605 shows a junction with sonic application. The following disclose ultrasonic devices: 3144037, 4339247, 4879011, 5779985,

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6010316, 6045208, 6065350, 6100084, 6234765, 6368871, 6413783, 6506584,
6649069, 6719449, 6777245, 6840380, 3396286.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tony G. Soohoo whose telephone number is (571) 272 1147. The examiner can normally be reached on 7:00 AM - 5:00 PM, Tues. - Fri..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wanda Walker can be reached on 571-272-1151. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Tony G Soohoo
Primary Examiner
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